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ABSTRACT

A 113-item survey instrument was designed to measure the class climate perceptions of 20,157 students in grades 7-12 as part of the "A Study of Schooling" research project. The 29 constructs of the questionnaire focused on students' interpersonal needs, classroom procedures, and instructional practices. Survey items were written in the first person singular, to measure affect or interpersonal relationships, as well as in the third person, to measure classroom instructional practices. Both factor and cluster analysis were used at the item level to explore the viability of the constructs. More than one correlation matrix was computed for appropriate units of analysis to identify conceptual differences between groups. Since a lack of consensus among students was viewed as leading to possible avenues for further study rather than as an error, the generally low percentage of between class variance was not disappointing. An analysis of the items revealed that differences in correlation ratios (eta squareds) can loosely be attributed to either the content or to the grammatical structure of the items. Constructs with lower correlation ratios asked questions that tended to divide classes into groups. Constructs with high correlation ratios tapped pervasive, salient features of the classroom, such as teacher characteristics that did not divide students into groups. The survey demonstrates the difficulties in writing meaningful, high inference items about classroom procedures on which students can agree. (FG)

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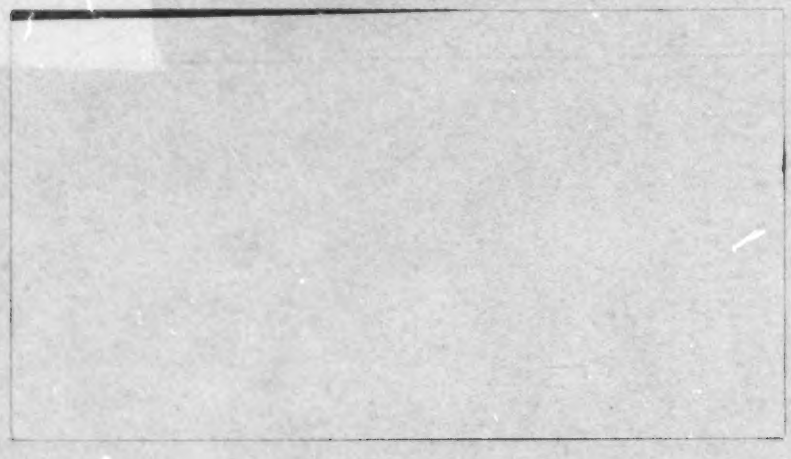

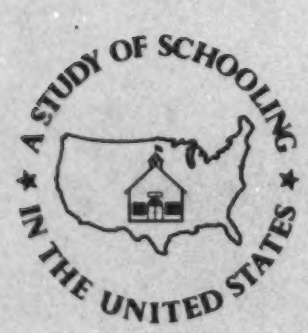

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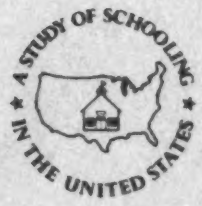

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ITEM VARIANCE COMPONENTS AND UNITS-OF-ANALYSIS IN A MEASURE OF CLASSROOM CLIMATE

Mitchell A. Nides

Technical Report No. 7

1980

A Study of Schooling is based upon the assumption that improving schools requires knowing what is happening in and around them. A comprehensive data-base of contextual information was obtained from students, teachers, administrators, parents and observers at all grade levels in thirty-eight elementary and secondary purposively sampled schools. *It is strongly recommended that readers of any technical report in this series first read Technical Report No. 1 which outlines the details, scope and limitations of the Study as a whole.*

It must be understood that this series of technical reports does not constitute the Study. Some reports are highly specific "molecular" inquiries while others take a more "molar" view across data sources, schooling levels, etc. Some reports are more methodological in nature arising out of issues in data analysis. Many of the reports quite naturally overlap in data analysed and interpretations rendered. Some authors have approached their task as consisting mostly of data description with little discussion beyond the presentation of the data. Others have ventured further into the realm of interpretation and speculation. *It must be further understood that data-based inferences can and do differ among researchers who come at the data from differing points-of-view.* Authors, therefore, are duly acknowledged for each report and are responsible for the material presented therein.

Item Variance Components and Units-of-Analysis
in a Measure of Classroom Climate

As one of the many substantive components of A Study of Schooling, student perceptions of their classroom climate or learning environment constituted a major research focus. Many questions have been formulated over the course of the Study concerning the relationships among dimensions of classroom learning environment as perceived by students, teachers and trained classroom observers.

These and other questions are currently serving as guides to what is essentially an exploratory data analysis of all the information collected from 38 schools in the Study during the Spring and Fall of 1977. The 13 elementary schools and 25 secondary schools (12 junior high or middle schools and 13 senior high schools) in this sample have yielded student questionnaire, teacher interview and questionnaire, and observation data for over 1000 classes (526, 369, and 134 at the senior high, junior high, and elementary levels, respectively). All students present in classes over the several days of questionnairing were included in the sample resulting in over 20,000 individual surveys (11,051; 9,106; and 3,444 at the senior high, junior high, and elementary levels, respectively). Classes were sampled at each school as randomly as possible, such that two classes per grade were obtained at each elementary school and samples of all subject areas and tracking levels were included in the classes at secondary schools.

A major portion of the class-specific section of the student surveys consisted of attitudinal, Likert-type items designed to measure class climate (27-item, 43-item, and 113-item versions at the early elementary, upper

elementary, and secondary levels, respectively). I wish to focus on the secondary version of the instrument and specifically, on the conceptual and methodological issues arising during the development and analysis of the 113 items.

Instrument Development

In the design phase of the Study, we decided (for reasons of efficiency and comparability of data and data collection) to construct only three student questionnaire booklets in optical scan format (early and upper elementary and secondary forms). Thus, the secondary class climate survey had to be functional over the entire 7-12 grade span, primarily in terms of reading level. Additionally, substantive interests on the /I/D/E/A/ staff ranged from the highly phenomenological views students might have about their classroom experience to the more environmental views students might have about classroom processes. No single existing instrument appeared to meet this spectrum of interests. Nor was there any survey which contained items written at a level of sufficiently low reading ability to accommodate our grade span. The staff, therefore, set out to develop a class climate instrument.

Actually, two such instruments emerged, representing the work of the two conceptual viewpoints noted above. One instrument focused heavily on the student's interpersonal needs as they might interact with those of the particular teacher and remaining students in a given classroom. (See Novotney, 1975 and Novotney and Overman, 1975.) The items and a priori constructs for this instrument had a kind of "psychological" bent to them and were written mostly in first person singular--item scales with titles like "teacher concern," "peer esteem," and "teacher punitiveness" were the result. The second instrument focused more heavily on classroom process,

having items more "sociological" in nature and written mostly in third person plural. The resulting instrument, largely adapted from Gordon's (1963) work, contained item scales with titles like "task," "authority," "compliance," and "order."

After a major pilot study and extensive factor analysis, it was determined that some of the constructs in both instruments overlapped, and that a single comprehensive survey encompassing both perspectives would be most useful. Although still no single instrument existed which we felt met our needs, several good surveys existed from which we borrowed or modified constructs and items. (We relied primarily on the LEI instrument developed by Anderson, 1971.) Adding these to the items we already had, and augmenting the collection with new items pertaining to "instructional practices," constructs which we felt were not sufficiently emphasized in our items and those of others, a pool of 113 items (written at approximately 7-8th grade reading level) and 29 constructs resulted.

Scale Analysis: Methods

At this point we departed considerably from what has been done by others in the field in two important ways: (1) we explored the viability of our a priori constructs by using factor (and cluster) analysis at the item level and (2) we computed more than one kind of correlation matrix for this purpose (the full results of the scale analysis will be reported at a later date). These modes of analysis suggested themselves as a result of our acknowledgement of a critical, and conceptually, very sticky issue having to do with appropriate units of analysis. In short, more than one correlation coefficient can be computed between two variables when the data can be organized into subsets determined by one (or more) grouping factors.

Thus, for example, the correlation between any two items on the climate inventory can be computed using students as units irrespective of their class membership (the "total" analysis); students as units, but within each class separately and then averaged across classes (the "pooled within" analysis); and/or the classes themselves as units using item means based on the students within the classes (the "between" analysis).

Why bother with all these different matrices? The answer is that the values in each matrix can be quite different and lead to substantially dissimilar item structures, i.e., scales as derived from cluster (or factor) analyses. Even more importantly, these potential differences are not statistical--they are conceptual. Choosing between one or another type of correlation coefficient amounts to selecting one or another perspective on the role of an item as a measurement device.

The psychometric implications of selecting different units to be analyzed are quite complex, and they are only beginning to be explored by relatively few researchers. The reader is referred to Sirotnik (1979) for a more in-depth discussion and illustration of the problem. Essentially, if the property being measured is conceptualized as fundamentally systemic, then the between analysis is most appropriate. The averaging process across individuals within groups becomes nothing more than an operational device for arriving at a single systemic measurement. If the property is viewed as fundamentally phenomenological, given a group or systemic context, then the within analysis is most appropriate. In this case, although the group mean can still be a relevant statistic, it must be conceptualized as an average of individual perceptions with its meaning being derived from the meanings of those individual perceptions. The total analysis

becomes relevant only when grouping factors become irrelevant. Obviously, in assessing class climate, grouping factors (namely classrooms) are relevant.

The majority of class climate researchers has adopted a systemic view of classroom climate. The interest has been to measure properties of the classroom, not the individual participants. Since it's impossible to get a valid response from a classroom (they have real trouble with paper and pencil instruments) it was deemed preferable to ascertain the classroom's characteristics through the responses of its participants. The classroom is, then, the theoretical unit of analysis and an aggregate statistic (usually the mean) becomes the statistical unit. Between class correlation and covariance matrices, then, are the appropriate ingredients for analysing the internal consistency or dimensionality of the items. To this end, items have invariably been written in the third person plural (i.e., "this class is disorganized" or "in this class students compete with each other for good grades"). If the item is stated clearly, the students within any class should be able to agree on its verisimility. Within class variation is seen as either (1) error to be lived with or (2) if too extensive, as a sign that the systemic content the item portends to measure does not exist in the classroom. For example, the developers of the classroom activities questionnaires (Steele, House and Kerins, 1970) advise that 75% of the respondents agree on an item or construct before ascribing the characteristic to the classroom.

A phenomenological view of the classroom as a group of individuals interacting within a context lends itself to analyses using either the individual or the group as the unit of analysis. It may be that the individual's unique perception of the classroom environment affects his or

her performance or attitudes. For such a study, items that maximize individual variation within the classroom context seem most appropriate. Items written in the first person singular, in theory, would accomplish this, since the students are not asked to judge anyone's experience but their own. These same individually referenced items could also be aggregated at the class level to determine if differences exist between classrooms. Similarly, third person items are appropriate from a phenomenological position and could be aggregated at the class level. The items, however, would not be conceptualized as a characteristic of the environment, but rather as the generalized perceptions of the participants. Individual differences within classes are viewed as possible avenues of study rather than error.

Item Analysis: Results

In an effort to determine the relative percentages of between and within class variation, correlation ratios* (eta squareds) were computed for each item, separately for both the junior high/middle and high school levels. Table 1 lists the eta squareds and ranks for each item (grouped by construct).**

The results showed that the largest percentage of between class variation was 32% (high school sample) for the item "This teacher makes this

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*The correlation ratio (or eta squared) is the proportion of between variation in the total variation using an ordinary analysis of variance breakdown of the items variance between and within classes. Computational formulas can be found in Knapp (1977).

** The constructs are the product of extensive factor and cluster analyses in conjunction with plain old common sense. The constructs best represent the similarities between the pooled within and between correlation matricies.

class enjoyable for me." The lowest between percentage was 7% (jr/mid sample) for the item "My classmates like me." The mean percentage over the entire secondary sample was approximately 16%.

These results might be rather disappointing to one who believes that consensus among students within a classroom is necessary to characterize the class an exibiting a climate or an "environmental press," or for one who is attempting to find differences between classes rather than using the individual as the unit-of-analysis.

These results are not surprising, however, when the factors working against consensus are considered. These include: response styles, such as acquiescence, extreme responding and indiscriminant responding; the ambiguity in high inference items, especially troublesome for younger students; sub-groups within the class viewing certain environmental characteristics differently. (For example, in a racially mixed class the teacher may favor one group, leading to differential perceptions of "teacher concern.")

Although the percentage of between class variance is generally low, there is, nonetheless, a considerable range of eta squared values. An analysis of the items revealed that differences in eta squareds can loosely be attributed to either the content of the construct the item attempts to measure or the grammatical structure of the item. The two are not independent in the sample, but for the sake of clarity, will be dealt with separately.

Item Content

Table 2 shows the mean eta squareds of the items aggregated at the construct level, for both the high and jr/mid samples. Working from the bottom up, let's first look at the six constructs which exibit the lowest eta squareds across both samples--namely Peer Esteem, Student Compliance, Task Difficulty, Student Cliqueness, Teacher Favoritism and Student

Competitiveness. I'll wait to hypothesize about what these constructs have in common until after each has been analyzed separately.

Teacher Favoritism — Students may differ in their perceptions of this construct depending on whether they are favored or not by the teacher. The teacher's pet may not realize that he/she is being treated differently from the other students while a student who is picked on constantly by the teacher may be acutely aware of the teachers behavior.

Student Cliqueness -- Similarly, students within cliques may not be as aware of the exclusion of other students as those who do not belong to a clique. Additionally, the cliques may have formed outside of the classroom, further diminishing differences between classes.

Peer Esteem -- These items clearly reflect enduring interpersonal skills and perceptions of the students: friendships are made and continue outside the classroom. The low eta squareds may point out how little effect individual secondary classes have on peer relationships. Until, however, it is shown that student peer esteem scores do not change from class to class, this hypothesis remains merely that.

Task Difficulty -- Due to differential interests, abilities and motivations among students, it's reasonable that perceptions of task difficulty are widely distributed within classes. Furthermore, "grading on the curve" guarantees that some students will perceive the class as wither difficult or easy regardless of the "true" degree of difficulty.

Student Competitiveness -- Several reasons may account for the low eta squareds including: (1) most students brought to the class fairly stable degrees of competitiveness that affect their perceptions; (2) it is a less obvious attribute of the class--one students may not have thought about before reading the questionnaire items.

Student Compliance -- In every class some students do the work while others don't, leading to differential perceptions. It may also be difficult to ascertain just how compliant other students in the class are.

To generalize, the constructs that exibit lower eta squareds ask questions that divide students within classes into groups. The groups perceive the environment differently--probably because they are experiencing it differently. Favored students have experiences that are different from those of non-favored students. The same holds for competitive vs. non-competitive students or high ability vs. low ability students or cliquish vs. non-cliquish students, etc. This is not a hard and fast rule, however, as Teacher Concern and Student Satisfaction could fit this catagory but have relatively large eta squareds.

The constructs with high eta squareds are more of a mixed bag, generally falling into one of the following two catagories.

1. The constructs tap pervasive, salient, easily observable characteristics or processes endogenous to the classroom. Examples include:

Classroom Physical Appearance -- Secondary students have been in enough classrooms to enable them to agree in their judgements about the physical environment.

Knowledge of Results or Student Decision Making -- Both of these constructs tap instructional practices that more or less affect all students equally.

Classroom Dissonance -- Anyone who has been in a number of classrooms can attest to the diversity in student "acting out." Some classes are quiet and "well-behaved" while others resemble Times Square on New Years Eve.

2. The constructs tap general teacher characteristics. This inclusion rule holds better for the jr/mid than the high school sample. At the jr/mid level, Teacher Concern, Teacher Authoritarianism, Teacher Enthusiasm and Teacher Punitiveness have relatively high eta squareds. At the high school level, Teacher Concern, Teacher Clarity and Teacher Authoritarianism are in the upper rankings.

Somewhat surprisingly Student Satisfaction ranked very high for the high school students and fairly high for the jr/mid students. One might argue that individual differences would lower the between class differences. It could be that the between class differences reflect subject area or tracking differences. It's also possible that student satisfaction is closely tied to perceptions of the teacher.

To repeat, items with high eta squareds generally reference characteristics of the class or characteristics of the teacher that do not break the students into groups.

Differences between jr/mid and high school students.

The average eta squared over the 113 items was .181 for the high school students and .1277 for the jr/mid students. This is a sizable difference, one probably due to the greater experience and reading comprehension of the high school students, rather than perceptual differences.

The correlation between the jr/mid and high school eta squareds was .85. This shows that the relative rankings of items by percentage of variance accounted for by between class differences was quite consistant across the two levels of schooling. There are, however, some very interesting differences. Table 3 lists all the items that showed a relative rank difference of more than 20 places between the highs and jr/mids. The top half shows those items with higher rankings for the mids while the lower

half shows higher rankings for the highs. For example, the eta squared of .159 for the first item "The teacher punishes me unfairly" ranked 28.5 among the jr/mid eta squareds. The corresponding eta squared of .145 for the high school sample places it only 76th among the 113 items. The rank difference is, therefore, 47.5.

A content analysis of the items clearly reveals major differences. The items which rank higher for the mids are steeped in emotional conflict between the teachers and students. The majority of the items originate in the Teacher Punitiveness, Teacher Authoritarianism, Student Compliance and Student Apathy constructs. Jr/mid students are passing through possibly the most rebellious life stage, struggling to gain independence from their parents. The teacher, the parent figure in the classroom, takes the full brunt of the teenagers internal conflict. Some teachers, for whatever reasons, are better equipped to diffuse or rechannel the combative energies of the students, hence, larger between class differences. High school students, on the other hand, are not compliant little angels, by any means, but for many, the authority conflict has already peaked as they begin to assume adult roles and responsibilities. Some who find it difficult to cope in the classroom drop out, further diminishing class conflict.

In contrast, the items with larger eta squared rankings for high school students reflect non-emotional instructional practices. The high school students are, to a greater extent than the jr/mids, concerned whether the teacher "gives me too much work" or "lets us know when we have not learned something well," than whether the teacher "punishes me unfairly" or "gets mad when I ask a question."

If, in fact, these ranking differences reflect maturational differences between jr/mid and high school students, then implication

exist for differential teacher training. Among other skills, jr/mid teachers need to know how to deal with the authority conflicts of their students--high school teachers with their students' perceptions of instruction.

Item Form

As mentioned in the instrument development section, items were written primarily in the first person singular to measure affect or interpersonal relationships. The third person was primarily used to measure structural or instructional properties of the classroom. A more detailed item form analysis revealed eight distinct item structures based on the referent of the subject and object (if applicable) of the statement. These types include:

1. The individual respondent in relation to some classroom or instructional process. (e.g., "I get to practice what I learn in this class.")

2. The students in relation to the individual. (e.g., "My classmates like me.")

3. The teacher in relation to the individual. (e.g., "The teacher gets mad when I ask a question.")

4. The teacher in relation to the students. (e.g., "Our teacher makes sure we finish our work.")

5. The students in relation to each other. (e.g., "Students in this class feel they have to do better than each other.")

6. Teacher characteristics. (e.g., "This teacher seems to like being a teacher.")

7. Students in relation to some classroom or instructional process. (e.g., "Many students don't know what they're supposed to be doing during class.")

8. Class characteristics. (e.g., "This class is disorganized.")

Each of these item forms asks conceptually different questions about the nature of the classroom and the relationships among the participants. Items with personal referents ask how the individual perceives him or herself within the environment. Items with student or class referents ask the student to generalize beyond their own experience and make judgements about the behavior or perceptions of the other students.

The higher inference level of the student or class referent items makes responding more difficult, in theory creating greater within class variation. But conversely, within class variation should be lowered as students are asked to respond more or less "on the average" rather than idiosyncratically.

Table 4 shows the mean eta squareds and standard deviations of the items comprising the eight item forms (high school sample only). As expected the class and student referent items have larger eta squareds than the individual referent items. These results can only be viewed as suggestive because item form is confounded with content. As an example, almost all of the interpersonal relationship items (e.g., Peer Esteem) are written in the first person. From a content point of view these items should demonstrate large within class differences.

A more direct test is available on a few pairs of items that are almost identical except for the referent. Table 5 shows these items and their eta squareds for both highs and jr/mids.

In some cases, the differences are striking as in the Student Apathy and Student Compliance pairs. In the others the differences are minor but in the expected direction. In all cases, the jr/mids show lesser differences

between the "I" and "non-I" items. This probably obtains because the younger students are less able to generalize beyond their own experience.

Discussion

The large percentages of item variance attributable to within class differences demonstrate how difficult it is to write meaningful, high inference items about classroom processes, on which students can agree. It seems that consensus is only likely when items tap low inference, essentially uninteresting properties of the classroom. The hypothetical item "The color of the classroom is primarily green" would be a good example.

The low eta squareds alone do not provide sufficient evidence that the items are measuring the phenomenological perceptions of individuals within a common environment rather than attributes of the environment. But they do at least show that shared environments can be perceived or interpreted differentially by the participants.

This does not mean that significant relationships using class aggregates are not possible. The studies reported in Walberg (1974) and Moos (1979) have shown significant relationships between climate scales and various outcomes. But the low eta squareds could partially accout for the generally inconsistant findings from the numerous studies using between class analyses.

The variance components analysis did reveal that the magnitude of an item's eta squared is largely dependent on the item's content and/or grammatical structure. Generally, items written in the third person exibited more between class variation than items written in the first person singular. A study designed to examine relationships between an individuals environmental perceptions and his/her achievement, might

maximize possible results by using items with first person singular referents. Studies using class aggregates might maximize between group variation by using items with third person referents.

Using items that tap highly salient, easily observable calssroom processes or teacher characteristics likely to affect all students equally, should also result in larger percentages of variation accounted for by between class differences.

If nothing else, this analysis shows how little we know about the separate and combined effects of form and content in determining individuals responses to Likert-type items.

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TABLE I

CLASSROOM LEARNING ENVIRONMENT

Scales and Items

Magnitude and Rank of Eta Squareds for High and Junior/Middle Schools

Eta Squared				Rank	
High	Jr/Mid			High	Jr/Mid
		Teacher Concern (8)			
.322	.274	1.	The teacher makes this class enjoyable for me.	1.0	2.0
.199	.162	4.	The teacher listens to me.	38.5	24.5
.224	.170	13.	The teacher lets me express my feelings.	26.5	15.5
.275	.265	14.	I like the teacher in this class.	7.0	3.0
.235	.216	-17.	I wish I had a different teacher for this class.	19.0	6.0
.182	.176	21.	I feel the teacher is honest with me.	54.5	12.5
.236	.234	22.	This teacher is friendly.	16.5	4.0
.156	.142	24.	The teacher is fair to me.	72.0	49.0
		Teacher Punitiveness (6)			
.238	.184	2.	The teacher makes fun of some students.	13.0	11.0
.116	.129	6.	This teacher hurts my feelings.	101.0	64.0
.093	.105	7.	I'm afraid of this teacher.	110.0	83.0
.145	.159	9.	The teacher punishes me unfairly.	76.0	28.5
.125	.110	11.	The teacher makes fun of me.	92.0	74.5
.157	.156	16.	The teacher gets mad when I ask a question.	70.5	34.0
		Teacher Authoritarianism (8)			
.212	.192	19.	This teacher is too strict.	30.0	8.0
.204	.154	45.	This teacher treats us like children.	34.0	37.0
.188	.147	49.	This teacher will never admit when he/she is wrong.	47.5	45.5
.208	.158	56.	We don't feel like we have any freedom in this class.	31.5	30.0
.192	.168	64.	This teacher acts like he/she is better than we are.	42.5	19.5
.189	.159	69.	This teacher "talks down" to us.	46.0	28.5
.120	.091	75.	This teacher never changes his/her mind about anything.	96.0	98.5
.177	.147	82.	I don't feel like I have any freedom in this class.	59.0	45.5

TABLE 1 (Continued)

			Teacher Favoritism (3)		
.183	.141	47.	The teacher likes some students in this class better than others.	52.5	50.5
.132	.103	-50.	The teacher has no favorites in this class.	86.0	86.0
.171	.137	77.	The teacher treats smart students in this class better than others.	64.0	52.0
			Teacher Enthusiasm (3)		
.185	.149	38.	This teacher seems to like being a teacher.	50.0	43.0
.191	.160	51.	This teacher seems to enjoy what he/she is teaching.	44.0	27.0
.159	.135	-60.	The teacher seems bored in this classroom.	69.0	53.0
			Peer Esteem (7)		
.109	.093	3.	I help my classmates with their work.	105.0	96.5
.126	.101	8.	If I am absent, my classmates help me to catch up on what I missed.	91.0	88.0
.110	.088	10.	I like my classmates.	104.0	102.0
.118	.077	12.	I like working with other students in this class.	99.0	111.5
.135	.093	15.	In this class, people care about me.	85.0	96.5
.120	.083	18.	If I had trouble with my work, most of my classmates would help me.	96.0	108.0
.092	.068	20.	My classmates like me.	111.0	113.0
			Student Decision-Making (8)		
.307	.186	32.	We are free to talk in this class about anything we want.	3.0	10.0
.141	.109	35.	Students help make the rules for this class.	81.0	77.0
.308	.275	37.	We are free to work with anyone we want to in this class.	2.0	1.0
.202	.130	74.	Students help decide what we do in this class.	35.5	61.5
.184	.131	80.	Different students can do different things in this class.	51.0	59.5
.120	.088	91.	Sometimes I can study or do things I am interested in even if they are different from what other students are studying or doing.	96.0	102.0
.181	.133	97.	I help decide what I do in this class.	56.0	56.0
.234	.154	40.	We can decide what we want to learn in this class.	21.5	37.0

			Classroom Dissonance (3)		
.228	.224	41.	The students in this class fight with each other.	24.0	5.0
.213	.170	54.	The students in this classargue with each other.	29.0	15.5
.268	.191	107.	Students in this class yell at each other.	9.0	9.0
			Student Competitiveness (4)		
.165	.109	48.	There is a lot of competition in this class.	66.0	77.0
.142	.087	65.	In this class, students compete with each other for good grades.	80.0	105.0
.106	.087	86.	When I'm in this class, I feel I have to do better than other students.	106.0	105.0
.123	.085	90.	Students in this class feel they have to do better than each other.	93.0	107.0
			Student Cliqueness (3)		
.136	.089	36.	Some groups of students refuse to mix with the rest of the class.	83.5	100.0
.178	.131	68.	Certain students stick together in small groups.	57.5	59.5
.149	.100	105.	When we work in small groups, many students work only with their close friends.	75.0	89.5
			Teacher Clarity (4)		
.091	.077	62.	The teacher uses words I can understand.	112.0	111.5
.215	.154	63.	The teacher gives clear directions.	28.0	37.0
.234	.147	95.	The students understand what the teacher is talking about.	21.5	45.5
.206	.133	109.	I understand what the teacher is talking about.	33.0	56.0
			Student Satisfaction (4)		
.254	.156	96.	Students feel good about what happens in class.	11.0	34.0
.202	.147	-101.	I don't like coming to this class.	35.5	45.5
.188	.112	108.	After class, I usually have a sense of satisfaction.	47.5	71.5
.237	.173	112.	I feel good about what happens in this class.	14.5	14.0

TABLE 1 (Continued)

			Student Compliance (4)		
.130	.130	53.	I usually do my homework.	87.5	61.5
.117	.111	87.	I usually do the work assigned in this class.	100.0	73.0
.200	.133	94.	The students in this class usually do the work assigned.	37.0	56.0
.136	.109	104.	I usually do everything my teacher tells me to do.	83.5	77.0
			Student Apathy (4)		
.182	.157	29.	Failing in this class would not bother most of the students.	54.5	31.5
.292	.204	-33.	Most of the students pay attention to the teacher.	4.0	7.0
.208	.143	34.	Students don't care about what goes on in this class.	31.5	48.0
.127	.119	67.	I don't care about what goes on in this class.	90.0	68.0
			Classroom Physical Appearance (2)		
.198	.151	70.	The room is bright and comfortable.	40.0	40.0
.235	.166	111.	I like the way this classroom looks.	19.0	21.0
			Instructional Practices: Knowledge of Results (4)		
.246	.176	30.	The teacher tells us how to correct the mistakes in our work.	12.0	12.5
.235	.168	42.	The teacher tells me how to correct the mistakes in my work.	19.0	19.5
.190	.112	43.	This teacher lets us know when we have not learned something well.	45.0	71.5
.155	.107	61.	We know when we have learned things correctly.	73.0	80.0
			Instructional Practices: Task Difficulty (4)		
.143	.087	44.	I do not have enough time to do my work for this class.	78.5	105.0
.174	.117	66.	Some of the things the teacher wants us to learn are just too hard.	61.5	69.0
.111	.097	73.	I have trouble reading the books and other materials in this class.	103.0	94.0
.195	.120	92.	The teacher gives me too much work to do in this class.	41.0	66.5

Instructional Practices: Organization (II)

.174	.129	28.	We know exactly what we have to get done in this class.	61.5	64.0
.224	.141	52.	We know why the things we are learning in this class are important.	26.5	50.5
.130	.103	57.	The grades or marks I get in this class help me to learn better.	87.5	86.0
.162	.132	-58.	We don't know what the teacher is trying to get us to learn in this class.	67.5	58.0
.167	.115	-72.	Many students don't know what they're supposed to be doing during class.	65.0	70.0
.237	.165	-76.	This class is disorganized.	14.5	22.0
.098	.100	-78.	The grades or marks I get in this class have nothing to do with what I really know.	107.0	89.5
.151	.110	-79.	We have to learn things without knowing why.	74.0	74.5
.157	.105	93.	Students know the goals of this class.	70.5	83.0
.236	.163	106.	Things are well planned in this class.	16.5	23.0
.255	.162	113.	Our teacher gives us good reasons for learning in this class.	10.0	24.5

TABLE 1 (Continued)

ITEMS NOT INCLUDED IN SCALES

.095	.097	5.	Students in this class are unfriendly to me.	108.5	94.0
.070	.088	23.	I feel left out of class activities.	113.0	102.0
.183	.161	25.	In this class, there is a strict set of rules for students to follow.	52.5	26.0
.186	.169	26.	This teacher tells us ahead of time what we are going to be learning about.	49.0	17.5
.231	.156	27.	This classroom is too crowded.	23.0	34.0
.192	.134	31.	This teacher makes sure I finish my work.	42.5	54.0
.113	.098	39.	I have to do the work the teacher assigns, even if I already know how to do it.	102.0	91.5
.095	.082	46.	Everyone in this class knows what we may or may not do.	108.5	109.0
.227	.150	55.	The teacher is willing to try different ways of doing things.	25.0	41.5
.128	.091	59.	I would like to be able to make more decisions about what goes on in this class.	89.0	98.5
.175	.105	71.	The books and other learning materials we use in this class are not very interesting.	60.0	83.0
.283	.169	81.	We do things over and over until we learn them.	6.0	17.5
.139	.097	83.	The grades or marks I get in this class are fair.	82.0	94.0
.199	.150	84.	I can always find books or materials in this class that are interesting to me.	38.5	41.5

.291	.157	85.	We get to practice what we learn in this class.	5.0	31.5
.144	.106	88.	We forget things we've been taught in this class because we don't practice them enough.	77.0	81.0
.178	.103	89.	There is always work to do in this class.	57.5	86.0
.162	.129	98.	There are not enough books or materials for everyone in this class to use.	67.5	64.0
.173	.120	99.	Our teacher makes sure we finish our work.	63.0	66.5
.270	.152	100.	I get to practice what I learn in this class.	8.0	39.0
.120	.098	102.	We don't have too many rules in this class.	96.0	91.5
.120	.080	103.	There are times when I have nothing to do in this class, and there are times when I have too much to do.	96.0	110.0
.143	.108	110.	We all have to finish our work in the same amount of time.	78.5	79.0

TABLE 2

RANK ORDER OF CONSTRUCTS BY MEAN ETA SQUAREDS

	High School		Junior/Middle	
	Construct	Eta Squared *	Construct	Eta Squared *
1.	Classroom Dissonance	23.7	Teacher Concern	20.5
2.	Teacher Concern	23.0	Classroom Dissonance	19.3
3.	Student Satisfaction	22.0	Classroom Physical Appearance	16.0
4.	Classroom Physical Appearance	22.0	Student Apathy	15.5
5.	Knowledge of Results	21.0	Teacher Authoritarianism	15.3
6.	Student Decision Making	20.9	Teacher Enthusiasm	15.0
7.	Student Apathy	20.3	Student Satisfaction	14.8
8.	Teacher Clarity	18.8	Knowledge of Results	14.3
9.	Teacher Authoritarianism	18.6	Teacher Punitiveness	14.2
10.	Organization	18.2	Student Decision Making	13.5
11.	Teacher Enthusiasm	18.0	Teacher Clarity	13.0
12.	Student Competitiveness	16.3	Organization	13.0
13.	Teacher Favoritism	16.0	Teacher Favoritism	12.7
14.	Student Cliqueness	15.7	Student Compliance	12.0
15.	Task Difficulty	15.5	Task Difficulty	10.8
16.	Teacher Punitiveness	14.8	Student Cliqueness	10.7
17.	Student Compliance	14.8	Student Competitiveness	9.5
18.	Peer Esteem	11.7	Peer Esteem	8.6

*Expressed as the <u>percentage</u> of the total variance accounted for by between class differences.

TABLE 3

RANK ORDER DIFFERENCES IN ETA SQUAREDS
FOR THE JR/MID AND HIGH SCHOOL SAMPLES

	Higher Eta Squared Ranking for Jr/Mids.	Rank Difference*	Eta Squared Jr/Mid	Eta Squared High
9.	The teacher punishes me unfairly.	47.5	.159	.145
21.	I feel the teacher is honest with me.	42.0	.176	.182
6.	This teacher hurts my feelings.	37.0	.129	.116
16.	The teacher gets mad when I ask a question.	36.5	.156	.157
26.	The teacher tells us ahead of time what we are going to be learning about.	31.5	.169	.186
87.	I usually do the work assigned in this class	27.0	.111	.117
7.	I'm afraid of this teacher.	27.0	.105	.090
25.	In this class there is a strict set of rules for students to follow.	26.5	.161	.183
53.	I usually do my homework.	26.0	.130	.130
64.	This teacher acts like he/she is better than we are.	23.0	.168	.192
29.	Failing in this class would not bother most of the students.	23.0	.157	.182
24.	The teacher is fair to me.	23.0	.142	.156
19.	This teacher is too strict.	22.0	.192	.212
67.	I don't care about what goes on in this class.	22.0	.119	.127
	Higher Eta Squared Ranking for Highs			
100.	I get to practice what I learn in this class.	31.0	.152	.270
89.	There is always work to do in this class.	28.5	.103	.178
44.	I do not have enough time to do my work for this class.	26.5	.087	.143
85.	We get to practice what we learn in this class.	26.5	.157	.291
43.	This teacher lets us know when we have not learned something well.	26.5	.112	.190
74.	Students help decide what we do in this class.	26.0	.130	.202
92.	The teacher gives me too much work to do in this class.	25.5	.120	.195
65.	In this class students compete with each other for good grades.	25.0	.087	.142
108.	After class I usually have a sense of satisfaction.	24.0	.112	.188
52.	We know why the things we are learning in this class are important.	24.0	.141	.224
95.	The students understand what the teacher is talking about.	24.0	.147	.234
96.	Students feel good about what happens in this class.	23.0	.156	.254
109.	I understand what the teacher is talking about.	23.0	.133	.206
71.	The books and other learning materials we use in this clas are not very interesting.	23.0	.105	.175

* The items shown have rank differences greater than or equal to 20.

TABLE 4

MEAN ETA SQUAREDS BY ITEM REFERENT TYPE

(High School Sample only)

Item	Type*	$\bar{X}$ Eta Squared	SD	Number of Items
Type 1	(Individual to Classroom)	.158	5.27	19
Type 2	(Students to Individual)	.114	.97	7
Type 3	(Teacher to Individual)	.177	6.27	20
Type 4	(Teacher to Students)	.2006	4.2	16
Type 5	(Students to Students)	.1800	5.24	8
Type 6	(Teacher Characteristic)	.1944	3.71	9
Type 7	(Students to Classroom)	.1970	5.9	23
Type 8	(Classroom Characteristic)	.2100	3.4	7

*See page 12 for a full explanation of item types.

TABLE 5

ETA SQUAREDS FOR ITEM PAIRS
THAT DIFFER IN REFERENT ONLY

ETA SQUARED		ITEMS
High School Sample	Jr/Mid Sample	
		STUDENT APATHY
.21	.14	34. Students don't care about what goes on in this class.
.13	.12	67. I don't care about what goes on in this class.
		STUDENT COMPLIANCE
.20	.13	94. The students in this class usually do the work assigned.
.12	.11	87. I usually do the work assigned.
		TEACHER CLARITY
.23	.15	95. The students understand what the teacher is talking about.
.21	.13	109. I understand what the teacher is talking about.
		STUDENT COMPETITIVENESS
.12	.09	90. Students in this class feel they have to do better than each other.
.11	.09	86. When I'm in this class I feel I have to do better than other students.
		TEACHER AUTHORITARIANISM
.21	.16	56. We don't feel like we have any freedom in this class.
.18	.15	82. I don't feel like I have any freedom in this class.
		KNOWLEDGE OF RESULTS
.25	.18	30. The teacher tells us how to correct the mistakes in our work.
.24	.17	42. The teacher tells me how to correct the mistakes in my work.